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WATER

FACTS ABOUT

LOW CONSUMPTION TOILETS

A MASSACHUSETTS WATER RESOURCES AUTHORITY PUBLICATION - SUMMER 1997

In recent years, the perception that water is plentiful has been replaced by the realization that a good water supply is a valuable asset, worth conserving and protecting. Consumers are also discovering that with rising water and sewer costs, more efficient water use can alleviate the strain on both their water supplies and their wallets. Low Consumption Toilets, also called ULFTs (Ultra Low Flush Toilets), have played a big part in making this water efficiency possible.

The 1989 revisions to the Massachusetts Plumbing Code made it the first state in the nation to require, in addition to other water efficient plumbing fixtures, the installation of the ULFT for all new construction and remodeling/replacement projects. Several other states soon followed suit. More recently, new Federal plumbing products standards, effective January of 1994, prohibit the manufacture of wasteful plumbing fixtures and ensure that only 1.6 gallon toilets will be sold.

This fact sheet has been prepared to assist you in making informed purchase and replacement decisions. The information it contains is not provided as a substitute for the judgement of a plumber, engineer, retailer or contractor, but is intended instead to help inform your discussions with any and all of these professionals.

How much does installing a 1.6 gallon toilet save?

Pre 1980, 7 gallons per flush	Pre 1980, 5 gallons per flush	Post 1980, 3.5 gallons per flush
5.4 gallons per flush or 77%	3.4 gallons per flush or 68%	1.9 gallons per flush or 54%

HOW MUCH CAN YOU SAVE?

Whether you replace one toilet in a single bathroom or several hundred toilets in a large commercial or residential complex you can expect to see a significant savings. The figure below illustrates water savings obtained from switching to a 1.6 gallon toilet. Replacing the more typical 3.5 gallon toilet with a 1.6 gallon toilet will save a family of four 11,096 gallons per year. That's a 54% reduction in bathroom water use. In fact, the more water the toilet being replaced uses, the more you'll save.

Water savings can be converted into dollar savings. The following charts present examples of the amount of money an average family of four can save and the calculation for determining the payback. The "payback" is the time it takes to recover the cost of buying and installing a low consumption toilet. Your payback time will depend upon the amount of water used by the old toilet as well as the cost to purchase and install a 1.6 gallon model.

WHY & WHEN TO REPLACE A TOILET

Toilets account for over 1/3 of water use in most homes. Installing a ULFT will save thousands of gallons each year and can automatically and permanently reduce your bathroom water use by more than half and reduce your total water costs too.

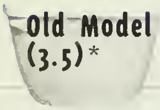
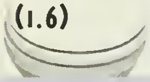
A good time to replace your toilet is during renovations or repairs. A leaking toilet can waste up to fifty gallons of water per day. Anytime a toilet is leaking you should consider replacement.

HOW TO CHOOSE A TOILET

Not all low consumption toilets are the same. Customer satisfaction varies among different types, models and manufacturers. There is also a wide range in price. Before you buy, consider which type of toilet is best for your home or apartment building. Use the checklist at right to guide you in your search.

Yearly Savings from Switching to an ULFT

For a family of four each flushing four times a day

Gallons Per Flush	X	**Daily Flushes**	X	**People Per Household**	X	**Days Per Year**	X	**Average MWRA Cost Per 1,000 Gallons 1996**	÷	**1,000 Gallons**	=	**Cost Per Year**
 **Old Model (3.5)***		4		4		365		$7.00		1,000		$143.00
 **ULFTs (1.6)**		4		4		365		$7.00		1,000		-$65.00
										Yearly Savings		$78.00

* without a toilet dam

Sample Payback Time for Switching to an ULFT

Approximate Installation Cost	÷	**Yearly Savings**	=	**3.3 Years**
($260.00)		($78.00)		

(Installation cost includes labor and materials for replacing a 3.5 gallon toilet with a typical 1.6 gallon model in white.)

To compute your yearly savings see the "Yearly Dollar Savings" chart at right.

Find Your Yearly Dollar Savings*

Use the entry in the left hand column closest to your household's average number of flushes per day and the dollar entry below closest to your town's water rate to find your corresponding yearly dollar savings.

# of Flushes per day	Town Water Rates in Cost per 1,000 Gallons										
	$4.00	$5.00	$6.00	AVERAGE 1996 $7.00	$8.00	$9.00	$10.00	$11.00	$12.00	$13.00	$14.00
4	11	14	17	19	22	25	28	31	33	36	39
6	17	21	25	29	33	37	42	46	50	54	58
8	22	28	33	39	44	50	55	61	67	72	78
10	28	35	42	49	55	62	69	76	83	90	97
12	33	42	50	58	67	75	83	92	100	108	117
14	39	49	58	68	78	87	97	107	117	126	136
16	44	55	67	78	89	100	111	122	133	144	155
18	50	62	75	87	100	112	125	137	150	162	175
20	55	69	83	97	111	125	139	153	166	180	194

* Assumes toilet being replaced is a 3.5 gallon per flush model typical in post-1980 installations. Earlier models may use up to 7.0 gallons per flush, in which case savings would be even greater.

ULTRA LOW FLUSH TOILET CHECKLIST

TYPE

Consider which of the residential ULFT types is best for your home:

✔**Gravity Toilets** are the most common. Water is stored in a tank and when flushed the water is released through a flapper valve and driven by gravity to clear out the bowl. These toilets require approximately 10-15 pounds per square inch (psi) of pressure at the connection to function properly.

✔**Pressure Assisted Toilets** are hybrids of gravity and flush valve toilets. A pressurized tank placed inside the porcelain tank compresses a pocket of air and releases pressurized water into the bowl and out the trapway at high velocity. The flushing action of these toilets is noisier than the gravity type and they require a minimum water pressure of 25 psi to operate properly.

✔**Flushometer toilets** are found in most commercial buildings. They have no tank but rely instead on a pressure-operated valve directly connected to the building's water supply. They require a larger supply pipe and a minimum water pressure of 25-40 psi to operate well.

PERFORMANCE

Customer concerns about earlier ULFT models clogging and requiring double flushing have been addressed by manufacturers. ULF toilets have been redesigned to improve performance and customer satisfaction. Customer satisfaction surveys show that the newer 1.6 gallon toilets perform as well if not better than the water wasting toilets they replace. Several design and plumbing features factor into how satisfactorily a ULFT operates:

✔**Water Seal:** surface area of the water standing in the bowl - correlates with bowl staining - small water seal can produce more staining, and require more frequent cleaning.

✔**Waste Removal:** how well the toilet evacuates bulk and waste from the bowl - main cause of double flushing.

✔**Dilution:** completeness of water change in the bowl.

✔**Drain Line Carry:** how far the ULFT transports solid waste down a sewer line.

✔**Noise:** what you hear when you flush.

COST

Be advised that a low-priced **pressure assisted toilet** may be more expensive than a mid-priced **gravity** toilet. Here are typical **retail price ranges:**

GRAVITY	PRESSURE ASSISTED
$70-$300	$210-$600

FACTORS THAT AFFECT COST

✔**Color:** "natural" and other non-white finishes-may cost $10-$30 more.

✔**Bowl shape:** elongated or round.

✔**Design:** one-piece and two-piece model-one-piece are usually more expensive.

✔**"Rough In":** the distance from the wall to the flange bolts that hold the toilet down - standard is 12". Toilets also are available in 10" or 14" - make sure you buy the right size.

OTHER THINGS TO LOOK FOR

✔Many models now have glazed trapways - reduces staining.

✔Pressure Assisted toilets tend to be louder than gravity.

✔Check out satisified customers - ask plumbers, building managers or friends for recommendations; look for customer satisfaction reports.

✔Look for manufacturer warranties that guarantee the toilet components for many years.

✔Don't be misled by old reports of poor performance - models have changed considerably from earlier ULFTs.

REMEMBER TO . . .

- Check the "footprint" of your new toilet to determine if any floor patching will need to be done around the base.
- Never use your toilet as a waste basket. Synthetic fibers such as dental floss, or plastic wrappers can clog drains and cause back ups.
- Hold the handle down until tank fully empties (some models don't have a quick flush).

REFERENCES & PERFORMANCE TESTS

The American National Standards Institute (ANSI) designs minimum performance tests and standards for ULFTs. Make sure you choose a model that meets these standards. Several excellent studies and consumer surveys have been conducted. Below is a list of resources for more information:

"New York City's Toilet Rebate Replacement Program Customer Satisfaction Survey" Final Report, December 16, 1996, Westat, Inc. (Prepared for the New York City Department of Environmental Protection)

The Water Efficiency Clearinghouse (Water Wiser) Tel: 1-800-559-9855, http: www.waterwiser.org, 6666 West Quincy Ave, Denver, CO 80235-9913

"Water Savers" Consumer Reports, February 1995

"A Survey of Ultra Low Flush Toilet Users" The Wirthlin Group, Prepared for The Los Angeles Dept. of Water and Power, October 1995. Available from: DWP Water Conservation Publications, Box 111, Room 1348, Los Angeles, CA 90051

"Survey of Ultra Low Flush Toilets" Ken Jacquay & Tony Foxen, Water Management, Inc. Alexandria, Virginia. February 1993

Performance Note: No evidence currently supports the theory that less water accompanying the passage of solid wastes through sewer lines results in stoppages or other wastewater flow problems. However, if you have experienced venting or clogging problems in the past, you should consult a plumber before replacing toilets.

For more water efficiency information call MWRA at **617-242-SAVE**.
For general information call **617-241-6057**, visit our world wide web site at **www.mwra.com** or write to us at:

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